

WEEKLY EDITION
OF THE

PUBLISHED BY

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Bees Fertilizing the Flowers.

One of our correspondents sends the following item copied from the *American Cultivator*, which shows that bees and fruit flourish together in England:

Lord Sudeley's fruit plantations at Toddington, in Gloucestershire, England, extend to about 400 acres, and the land was formerly an arable farm rented at \$5 per acre, which nobody would take. The past season has not been a good one, but 75 tons of fruit have been gathered. There are 50,000 plum trees, 900 pear trees, 9,000 damsons, and 500 cherry trees. Of small fruits there are 222,000 black-currant bushes, 120,000 raspberries, 20,000 red currants, 100,000 gooseberries, while 130 acres are devoted entirely to strawberries. There are also 10,000 poplars, 100 Scotch firs, and 100 cobnuts, planted for sheltering purposes. Lord Sudeley has established a bee-farm as well, which he finds a valuable aid in his fruit culture. There are 170 colonies, and they have proved most profitable. Adjoining the apiary, is a rabbit warren of 200 acres, in which 8,000 rabbits are killed every season. Lord Sudeley sells all his fruit to a jam maker of Ealing, who has built a jam factory at Toddington, where 160 tons have been made this season.

But for the oft-repeated visits of the bees, many a beautiful flower would in a short time cease to bud, bloom, yield fruit, or even live! Many plants absolutely require the visits of bees, or other insects, to remove their pollen-masses, and thus to fertilize them. In a letter just received from Mr. F. D. Wellcome, of Maine, he thus argues the point with "fruit growers" concerning the utility of bees to them:

I find that bees are one of the best investments for the fruit grower. I find them especially helpful in fertilizing pistillate varieties of strawberries, etc., which blossom at a time when they are in want of much pol-

len; and they are always in quest of honey from the same source. In dull seasons, when strawberries are in blossom, the action of the wind cannot fertilize the pistillates properly, in which case a colony of bees is worth many times its cost, aside from the profit realized from them. Last summer I had 50 colonies and 25 nuclei, and after disposing of some of them, I packed 25 colonies in chaff on the summer stands. The last was a poor season, and I obtained no honey.

Mr. B. Ames, of Thorndike, Maine, has sent us a device for reversing frames. It consists of a piece of galvanized iron bent something like this:

to be fastened to each end of the frame. The projecting ends are similar to those of the Novice metal corner; the sides of these corners are of the same piece, with a flange to pass about $\frac{1}{4}$ of an inch over the end-bars to hold them in place. In the end-bars screws, about one inch from the top and bottom, pass over a hole in the galvanized iron to which is connected a slot, running downwards, and the screw passing into this slot holds the frame in position. This makes a strong, durable and easily-manipulated device.

Mr. W. M. Woodward, of Custer, Ills., sends us a robber-proof entrance-block and remarks as follows concerning it: "Any one troubled by robber-bees may be glad to learn of a simple device which, if made and used rightly, will effectually prevent their depredations. It will effectually shut out robbers, and yet allow the bees of the colony to pass in and out at pleasure." He adds:

I make it thus: Take a piece $\frac{1}{2} \times \frac{3}{8}$ of an inch, and as long as the hive is wide; another piece the same length by $\frac{3}{8}$ of an inch, plus the thickness of the hive stuff, in width, and as thick as to fit tightly into the entrance, but not exceeding $\frac{3}{8}$ of an inch, else it may give room for more than one bee to pass in the perpendicular. Saw squarely off the thin piece, in the centre, and mitre two corners back $\frac{1}{2}$ of an inch each way. Be particular about this, as it is one of the secrets of success. On the mitred side of the thin pieces slit with a saw $\frac{1}{8}$ the length from, each end, and $\frac{1}{2}$ of an inch from the edge. To put the pieces together, place the two thin pieces upon the $\frac{3}{8}$ -inch side of the long piece, with the mitres together, and the mitred side even, and nail with flat-headed wire-nails $\frac{1}{4}$ of an inch from the outer ends. Slide the pieces as far apart as they will go, and then nail $\frac{1}{2}$ of an inch from the inner end.

Take it just as it is, spread, and cut away the back from each end, smooth with the narrow strip, and just far enough to shove into the entrance of the hive. To use, close it as much as is desired, and shove it into the entrance, observing that the ends fit closely to the hive, and tight enough to not be easily moved. The upper, or $\frac{3}{8}$ -inch strip, serves as a false alighting-board, and will be used by the robber bees, while the robbed colony will use the true one. The small and shallow mitre allows a single bee to stand before the entrance under good backing, and no robber will venture within its grasp. I had a colony which had given up, and were clustered in another part of the hive; I smoked and jarred them until the robbers were all out, and closed the entrance for an hour or two, until they came down to the entrance to get out, then I forced the slides apart while robbers were still thick around the hive. The bees of the robbed colony burst out on the alighting-board and became quite thick, and before they returned they had discovered the Thermopylae which I had constructed for them, and they successfully defended it afterwards.

The "Canadian Bee Journal," is the title of a new bee-paper published by D. A. Jones & Co., Beeton, Ont. Names are plenty enough without taking that of *Bee Journal*, which for a quarter of a century has been the name of our paper. It is not only unjust but unwise, for it will cause much confusion among patrons and agents. The Dominion of Canada is a part of America, and as such it is fully included in the cognomen of THE AMERICAN BEE JOURNAL. Why not have taken the name of one of the scores of bee-papers that have died, instead of appropriating that of the oldest living bee-paper on the American Continent? We have none but the kindest feelings towards the new paper, but its name should be changed.

From A. J. & E. Hatfield, South Bend, Ind., comes a section-case for a Langstroth hive to hold 24 one-pound sections, arranged with wood separators. The sections rest on iron slats, and the separators run the whole length of the case. It is a nice arrangement.

Catalogues for 1885.—We have received the following:

J. H. & W. Robertson, Pawamo, Mich.
H. H. Brown, Light Street, Pa.
F. W. Jones, Bedford, Quebec, Canada.
C. Weckesser, Marshallville, O.
Charles D. Duvall, Spencerville, Md.
G. R. Tyrrell, Laporte, Ind.
C. M. Goodspeed, Thorn Hill, N. Y.
F. O. Updegraff & Co., Irvington, Ind.—Poultry and Stock.
J. V. Cotta, Lanark, Ill.—Fruit.



REPLIES by Prominent Apiculturists.

Shading for Hives.

Query, No. 47.—What is the best method of shading hives from the sun?—N. J.

MESSRS. DADANT & SON reply: "We shade our hives with roofs made of coarse lumber, one for each hive, projecting about 6 inches in front, and sloped only one way."

DR. G. L. TINKER replies thus: "The heat of the sun's rays striking directly on the entrance of the hive at mid-day, gives the most trouble. The best method of shading is to front the hives toward the east."

G. M. DOOLITTLE replies as follows: "With a light shade-board made of lath, or other thin stuff. Where high winds prevail, I prefer painting the hives white, especially the tops, when shading is rarely needed, as white repels the heat."

G. W. DEMAREE replies thus: "I prefer an 'over-cover' of light material—so made as to project about 6 inches over the south side of the hive."

W. Z. HUTCHINSON answers thus: "With a light board 2x3 feet in size. Such boards can be made very cheaply by nailing the butts of shingles to a strip of board. Have the hive face toward the east; place one of the longer edges of the board even with the north edge of the hive, keeping the board in place with a 15-lb. stone."

PROF. A. J. COOK remarks thus: "Everything considered, I think that Mr. Heddon's plan of an extra board 4 inches above the hive is the best. Two pieces nailed crosswise of the board prevents warping, and keeps the board just the proper distance from the hive."

JAMES HEDDON replies as follows: "I much prefer a quick, readily-adjustable shade. My hives front east, and I use a shade-board 2x3 feet, its length running lengthwise with the hive. It projects equally beyond each end, and all its extra width is given to the southern side. It is held in place by a stone weighing about 15 lbs. I can manipulate this stone and shade in less time than I can handle or get around any other fixture for the purpose. I never saw any style of hive which I should not want shaded during a part of the year, and exposed to the sun at other times."

Frames Crosswise to the Entrance.

Query, No. 48.—What are the advantages (if any) when the frames run crosswise to the entrance?—Riverside.

JAMES HEDDON answers thus: "Practically there is none, as regards the bees. Though they instinctively build the other way, practically we find no advantage in that."

PROF. A. J. COOK remarks thus: "I have had frames both ways for years, and I see no difference. Convenience should guide."

DR. G. L. TINKER replies thus: "There are none."

G. M. DOOLITTLE answers as follows: "I consider it a disadvantage to have them run thus."

G. W. DEMAREE answers thus: "I have tried frames both ways, and I prefer to have the ends of the frames pointing towards the entrance."

W. Z. HUTCHINSON remarks thus: "When the frames are crosswise to the entrance, only one division-board is needed when contracting the brood-nest. Bees are less likely to swarm when their brood is far removed from the entrance, and if the frames run crosswise to the entrance, it is an easy matter to keep the brood at the back of the hive by occasionally changing the combs about."

Transferring Bees from Box-Hives.

Query, No. 49.—What is the best method (briefly stated) of transferring bees from box-hives.—Burlington.

DADANT & SON remark as follows: "Drive the bees back, then transfer the worker-comb only, by fastening it with wire clamps. These can be removed in a few days. Do not allow any leaking of honey, as it may cause the colony to be robbed."

PROF. A. J. COOK answers as follows: "Mr. Heddon's method of drumming out and hiving upon foundation is good. The combs are melted up when the brood is all out. The old way is more trouble, but in lieu of foundation or very early in the season, it is to be preferred."

W. Z. HUTCHINSON remarks thus: "Drive the bees from the box-hive, and put them into a hive furnished with wired frames of foundation. Twenty-one days later, again drive the bees from the box-hive—destroy the queen accompanying this second 'driven colony,' and unite the bees with the bees first driven out. Extract the honey from the box-hive, and melt the combs into wax for making more foundation."

H. R. BOARDMAN replies thus: "Drum out the bees at the commencement of the honey-season, and hive them upon foundation the same as a new swarm upon the old stand; be sure and get the queen. Remove the old colony to a new stand, and drum out the balance of the bees when hatched from the brood, and unite them with the new colony; use the honey to feed up the new colony, and melt up the combs into wax."

G. W. DEMAREE answers: "If the combs in the box-hives are good ones, then, decidedly, the method given in the standard works on bee-culture, is the best; but if the combs are very old and crooked, it will pay best to divide the bees into hives with full sheets of foundation, as described by Mr. Heddon heretofore."

Metal Rabbets and Corners.

Query, No. 50.—What are the advantages of metal rabbets on hives, and metal corners on frames?—J. H.

PROF. A. J. COOK remarks thus: "Metal rabbets prevent annoyance from too firm gluing. To the unbiased mind, I think that metal corners would be pronounced a nuisance."

G. M. DOOLITTLE replies thus: "I use neither, as I consider their disadvantage greater than their advantage."

W. Z. HUTCHINSON says: "They prevent the bees from fastening the projecting ends of the top-bars to the rabbets of the hive with propolis. I would never use metal corners, but I would use metal bearings (not 'rabbets'—'call things by their right names') only in supers. The reasons why—would occupy too much space for this department."

G. W. DEMAREE replies as follows: "Metal rabbets are unnecessary, except in the upper stories used for extracting; and metal corners are a nuisance anywhere; they are good for nothing but to cut the operator's hands when handling combs loaded with honey, and to jump out of place just when one wants them to stay in place. I like a good 'movable frame,' but I do not want a 'suple jack' frame."

JAMES HEDDON replies as follows: "The advantages are that the bees cannot glue the frames as solidly, and that there is less liability of pinching a bee when the frame is replaced. The latter is more than offset by the miserable hand-hold afforded by metal corners; the former, by the fact of the frames sliding about when the hives are moved from place to place. With tenement hives, they do better, but these are rapidly moving out among the 'has-beens.' I reject both, except the metal rabbit in the extracting supers. I have tested metal rabbets thoroughly since 1871."

DR. G. L. TINKER remarks thus: "I prefer metal rabbets, as they greatly facilitate the handling of the frames. As to metal corners, they are detrimental in many ways."

The second annual meeting of the Des Moines County (Iowa) Bee-Keepers' Association, will be held at the Court House in Burlington, Iowa, on April 28, 1885, at 10 a. m. All interested are cordially invited to attend and make the meeting as profitable as possible. All implements of the apiculture sent to the Secretary will be exhibited at the meeting, and will be disposed of or returned, as the owner directs. **JOHN NAU, Sec.**

The Willamette Valley Bee-Keepers' Association will hold its second meeting at La Fayette, Oregon, on the third Tuesday in June, 1885. All who are interested are invited to attend. **E. J. HADLEY, Sec.**

The Central Illinois Bee-Keepers' Association will meet at Jacksonville, Ill., at 10 a. m., on Saturday, May 2, 1885. **WM. CAMM, Sec.**

The spring meeting of the Cortland Union Bee-Keepers' Association will be held in Cortland, N. Y., on May 12, 1885. **W. H. BEACH, Sec.**

CORRESPONDENCE

Explanatory.—The figures BEFORE the names indicate the number of years that the person has kept bees. Those AFTER, show the number of colonies the writer had in the previous spring and fall, or fall and spring, as the time of the year may require.

This mark ⊙ indicates that the apiarist is located near the centre of the State named: ♂ north of the centre; ♀ south; ⊕ east; ⊖ west; and this ♂ northeast; ⊙ northwest; ⊕ southeast; and ♀ southwest of the centre of the State mentioned.

Read at the Davenport Convention.

Starvation and Bee-Diarrhea.

WM. GOOS.

I wish to endorse Dr. Southwick's remarks on page 171, that the bees mentioned died of starvation, and that starvation was the cause of the symptoms of diarrhea which the bees exhibited. In support of which I want to give a few facts as I have found them in my experiments and observations on bees that have died during winter.

Of the many conflicting theories advanced as the cause of our winter losses, I think that the "pollen theory" comes the nearest to the principal cause of loss, though in an indirect way, and not as some would have us believe: that is, not for the reason that it causes diarrhea, but because by its use in a natural, and in itself harmless, way, it may, by the combination of circumstances, become the cause of the most terrible loss. I speak of pollen as an indirect cause of loss, for the reason that the final result may be changed without removing the principal cause—pollen.

When I first read of the "pollen theory," in the fall of 1881, I decided to take out all the pollen in my five hives, and note the effect. As my hives were used for producing extracted honey, I did not have much difficulty in selecting combs which contained no pollen, and as the combs were new, I could hold them in the light and see the pollen. Not having quite enough full frames which contained no pollen, to winter them on, I took enough partially filled ones and fed sugar syrup, and not one of the 5 colonies reared any brood until they could gather pollen from the maple trees, being from a month to six weeks later than the time when my neighbors' bees began to work on the pollen. So far as I could see, the only benefit to be derived from taking away the pollen was, that the bees would not breed without it.

In the spring of 1881 I made a discovery proving to my mind that starvation was the cause of diarrhea, but I decided to say nothing about it to any one until I should collect such evidence as could leave no doubt in my conclusions.

During the winter of 1882-83, I examined 2 colonies of bees that had died during the latter part of February, 1883. They were just as they had died, and I had a good chance to see the cause, which was the same in each case. The dead bees were still between the frames, and many of them still clustered over the brood that they would not leave, though death had stared them in the face, for there was not a cell of honey within reach of the cluster; by leaving the brood to die they might easily have moved to some other part of the hive during the first warm day, where

there was honey in plenty; this they would or could not do, and the few bees that attempted it, in the cold weather, if any such there were, must have instantly chilled and died when they left the warm cluster, for the honey was as cold as ice. In all such cases I have found pollen on the frames whereon the bees had clustered, which was, no doubt, the cause of their breeding. This shows me two things, viz:

1. Bees, when left with pollen in the hive, begin to breed very early in the spring, or rather, in the winter, generally about the middle of January, probably owing to the fact that usually they then have their first winter flight. I say that probably this is the reason, for I have noticed that when they have their first good winter flight, after real cold weather has set in, I invariably find brood in some of the hives on the next warm day, which generally occurs in about 2 or 3 weeks. This was true last year, and also this year, as they had a good flight on Jan. 8, and another on Feb. 3, when they had sealed brood.

2. Unless there is plenty of honey near the brood-nest, they will starve with honey in the hive. As the bees always cluster on the centre frame, in the fall and winter, usually so close together as to cluster only between from 3 to 5 bee-spaces, and as these frames are always in the hive, they contain less honey in the fall than the outside ones, being generally not more than one-half full; the reason for this is, that they breed in these frames more or less until honey ceases to come in in the fall, and, of course, they then have nothing to fill them up with, and then what they do contain is always the first consumed. About the middle of January the queen lays in the empty part of these frames, and the bees cluster closely around the brood, and always consume the honey near the brood-nest first; and those that breed much, are more liable to get short of honey on these frames. Such as consume much honey, or had too short an allowance in the fall, will have consumed all the honey within reach of the cluster in a short time after they begin to breed; and if the weather is so cold that the bees are unable to move around in search of food, they will have nothing to eat or to feed the brood, as the cluster will not move from its position, and the result is that they die of starvation with plenty of honey just out of their reach. This would not be the case if we had occasional warm days, for they would carry enough honey within reach to last a few days; but if the weather remains cold enough for bees to cluster, they will be lost; this does not usually happen before the latter part of February or the first part of March, and it may happen even later, if the weather remains cold enough for the bees to cluster.

Bees have died early in this section this year, doubtless owing to the fact that we had scarcely any fall honey, and, of course, this left the frames that contained brood during the fall, with very little honey; and then the winter has been so cold, thus causing the bees to consume more honey to keep up the required amount of heat. All who did not feed their bees plentifully last fall, will have lost heavily during the winter. Very strong colonies generally winter the best, as they cover more frames, or cluster between more bee-spaces; this brings them nearer to the outside of the hive where there is more honey; if there are bee-spaces or winter passages over the frames, the cluster will move back on all the frames at the same time.

To explain more fully: Suppose that we had a colony of bees wherein the two centre combs contained but very little honey, say about one-third full, and the next combs on either side were almost full of honey; and that the bees clustered on

all four frames; the bees on the two centre frames would not move back any faster than those on the two outside combs, showing that those on the outside combs must pass the honey to those on the centre frame, thus enabling them to keep the cluster altogether instead of scattering it, as would be the case if those that clustered on the centre frames moved back as fast as they consumed what honey was on those combs without any help from those on the outside combs, as those on the outside combs would move back only so fast as they consumed the honey. This shows the advantage of a large colony over a small one, in this respect; for, suppose that we had 2 colonies of bees to prepare for winter, both having an equal amount of honey and pollen, namely, four frames one-third full in the centre, and four full ones, two on either side of the four empty ones, and suppose that one colony was so weak that it could only cluster in three bee-spaces, and as there would be almost as many bees clustered in these three bee-spaces as there would be between the same number of bee-spaces in the stronger one, and as they would consume the honey only between these three bee-spaces, they would have to move back on these three frames much faster than the stronger colony that would cover 5 or 6 bee-spaces. If the weather were still cold enough for bees to cluster, the weaker one would die of starvation and diarrhea, and the stronger one would still be in a healthy condition. For this reason I should advise putting Hill's device over the frames, or making holes through the combs, so that the bees in one bee-space can more readily communicate with the rest of the cluster, for although, they always have a bee-space between the quilt or honey-board, and the top of the frames, by using Hill's device it makes the bee-space larger, and keeps them in communication with each other.

From the above, some may get the impression that bees never starve without brood in the hive; this is generally, though not always, the case, as I have seen several colonies this winter that died of starvation and diarrhea without brood in the hive; but this is easily accounted for as they were not very strong, and could not cluster in many bee-spaces or cover many frames of honey, and as very little if any honey came in after the bees slackened up in breeding last fall, the frames on which they clustered contained but little honey; and the weather was unusually protracted cold during the month of January that they could not have moved the cluster to the other frames even if they had been so inclined. I have never seen a case where the cluster moved their position to other frames than the ones on which they clustered in the fall, even though they got out the honey on those frames.

I can easily see why the pollen theory was advanced, for in every case that I have seen, where bees have died in winter, I found pollen on the frames on which the bees had clustered, and as the honey that had covered the pollen in the fall had all been taken out, and as there was still plenty of honey in the outside frames, and as all showed signs of diarrhea, what is more natural, at first sight, than to conclude that the bees had died with the diarrhea? This was jumping at a conclusion, for the honey on the frames on which the bees had clustered, had all been used, and the cluster of bees could not move to the frames nearer the outside of the hive, in very cold weather.

That starvation is the real cause of winter loss and diarrhea, I have no doubt; for several times in the latter part of February, on a warm day, I have found several colonies having but little honey; and, last year, a few that had none in the frames on which they were clustered,

Knowing what the result would be if the weather remained cold enough for bees to cluster a week at a time, if I left them in that condition, I moved two of the outside combs that were full of honey, next to those that contained brood, one on either side, so that the bees must then also cover a part of the fame of sealed honey; doubtless this saved the life of the bees, as the frames on which the bees were clustered contained brood and also pollen, and in fact were in every respect the same as those I had seen that had died of diarrhea and starvation.

Some may claim that the moving of the frames did not save the bees from death by diarrhea, but that the cleansing flight they had on the warm day on which I changed the combs saved their life. On the same day a neighbor having lost several colonies, had but two left, and these also had a flight, and were then in a normal condition. After this warm day we had about a week of cold weather, cold enough for bees to cluster, and then another warm day, when both of them were dead. The cleansing flight they had on the first warm day, did not save them, and they died of starvation and diarrhea. On examining them I found the combs in every respect similar to mine on the first warm day, as both had consumed all the honey on the frames, on which they were clustered; both had pollen and brood on those frames, and I doubt not, had he placed two of the outside combs next to the brood, they would not have died, nor would they have had the diarrhea.

I believe that this difficulty can usually be prevented by removing all the pollen, for, as my experiment showed, they will not breed without pollen, and the result is, that they consumed not more than two-thirds as much honey. Again: Suppose a colony when breeding, had a certain number of frames on which the bees were clustered, and that these frames contained honey enough to last them three months, this same colony, when not breeding, would consume but from one-half to two-thirds of this same amount during the same length of time, and, of course, instead of lasting only three months, it would last from 4½ to 6 months, thus bringing them safely through the winter, when, if breeding, they would have starved long before.

I should not recommend the wintering of bees without pollen for the following reasons: 1. Unless in new combs, you cannot see or take out all of the pollen, for the bees cover it with honey and then seal it over; and if they have only a little they will breed just as much; and the same would be the result as if all the pollen were left in.

2. When the pollen is left in, the bees will be much stronger in the spring than they will when not allowed to breed, and I think it pays.

I usually prepare my bees for winter during the first week in October, leaving only as many frames as the bees can well cover, taking out those nearly empty, which are generally near the centre of the hive, and leaving such of the centre frames as contain brood, which I generally find to be from one to three, according to strength of the colony. If some of the stronger colonies have more brood than I then care for them to have, I place them in such hives as have the least brood, leaving only from two to three frames. I never leave more than three partially empty frames in the strongest colonies, and only two in such as will cover less than 7 Langstroth frames. I prefer these centre frames to be two-thirds full of honey, and the balance full of sealed honey. I then place the full frames next to the partially empty ones, putting half of them on either side, my object in so doing being that when the bees cluster, a part of the cluster must cover these full

frames; and if these frames are not full of honey, I feed enough sugar syrup to fill them. Before feeding, I arrange the frames as I want them in winter, and if the colony is small, I leave only frames enough for them to entirely cover, and put in a division-board; then I give them from two quarts to a gallon of syrup at a time, according to the amount required, and they fill the combs so quickly that it does not start breeding, as would be the case if I fed a little at a time.

After all the frames have been arranged to my satisfaction, I place Hill's device over them, and over this a blanket of coarse coffee-sacking to prevent the bees from gnawing through, then fill the top story with sawdust, and as I have a large auger hole in each gable end of the cover of the hive, this draws all the moisture into the straw, as I find the straw damp and moldy in the spring, and the lower story dry and sweet. They are then ready to withstand the coldest winter on the summer stands. By this plan bees will winter in the coldest weather on the summer stands and not freeze. I have wintered several small colonies that were late swarms, in single-walled hives on the summer stands, and unprotected, when it was 31° below zero. The wind was so strong that I had to tie the covers down, and screw the entrance-blocks down, and they came through in good condition; in fact they seemed stronger in the spring than they were in the fall.

Davenport, Iowa.

For the American Bee Journal.

The Causes of Bee-Diarrhea.

W. J. DAVIS.

The past winter has tested the power of endurance in animal life. The long continuance and severity of the cold must necessarily have produced heavy losses of bees in most of the Northern States. But out of those losses some lessons of instruction should be gathered. I think that scientific apiarists are agreed that usually not one, but a combination of causes produce destructive bee-diarrhea. Good food, and plenty of it, pure air in abundance, and protection from extremes of heat and cold, are three very important conditions of health. Bees do survive severe winters when the food and ventilation are right. They may survive with poor food, if the winter is mild enough to allow of frequent flights. In this latitude we may reasonably expect plenty of cold weather; mild winters are the exception. Hence, if we expect success in wintering, the first question to be decided is, the quality and quantity of winter stores; and, second, that condition of temperature and ventilation which will allow of five months of confinement, if the winter be of that character to require it.

I have had experience both in the past and present, with bee-diarrhea, and the present experience prompts this article, and with the hope of throwing some light on the subject, I propose to give that experience.

About 12 or 13 years ago a very great mortality of bees occurred, taking every bee in some apiaries, and once since, a mortality nearly as great. An analysis of the case so far as could be reached, revealed these

facts: The preceding autumn had been warm and dry, and plant-lice accumulated in large numbers, particularly on beech trees. They exuded a dark, sweetish, bitter liquid which was collected and stored by the bees. The absence of beech trees in this locality gave me a happy release from that trouble. But Mr. M. K. Wing, of Chautauqua County, N. Y., brought me a bottle of the "vile stuff," and it made me think of what a friend said about Mitchell's patent slippery-elm bee-feed, "the smell of it would cause a bee to vomit." Bees cannot be wintered in this latitude on such "honey-dew."

In the winter and spring of 1883 I lost, in one locality, 15 out of 23 colonies; 3 very strong colonies that had given the best results in surplus comb honey during the previous summer were the first to die. They had stored all their good honey in the supers, and they had put fall honey in the brood-combs, after the removal of the surplus-boxes; and I have reason to believe that it was largely from the blossoms of the boneset, recommended by Prof. Cook, in the second edition of his Manual, as a honey plant. There was considerable boneset in bloom in that locality in the autumn of 1882, and but little else. I am satisfied in my own mind that it was not the so-called honey-dew. There is no boneset near my home apiary, and my bees at home had no diarrhea that spring.

Last fall I brought all my bees home to winter; part of them were brought five miles in a spring wagon. I moved them as it suited my convenience—the first load on Aug. 9, and the last was brought home on Oct. 18. From Nov. 6 to Nov. 20, 100 colonies were put in a cellar under my house, and 100 in a wintering-house (above ground). One colony has died of diarrhea, and several more have it pretty badly. Every colony so affected was among the last brought home. There is not the slightest sign of diarrhea among any that were at home during the season, or those first brought home. There was boneset in that locality; none here. I have lost 3 colonies by starvation (with honey in the hives, but they failed to reach it), and no sign of diarrhea with either of them; hence starvation does not always produce diarrhea.

Another cause of bee-diarrhea is unseasonable breeding. Mr. Langstroth says in his work, that the queens begin to deposit eggs early in January, and I am quite sure that he is correct. But suppose all queens do begin to lay at that time, the amount of brood produced depends on the encouragement given the queen by the bees. The presence of pollen in the hive would, as a matter of course, incline the bees to brood-rearing, and as the cells within the cluster become filled with brood, the bees are unable to pack as closely as when each cell can hold an adult bee; hence the ability to resist cold is diminished, and a feeling of unrest seizes the colony; large quantities of food are eaten, and the result is diarrhea. In the absence of pollen, or any substi-

tute therefor, bees will not, and I might say cannot, rear brood. What the further developments of the the past winter may be, before the bees can have a cleansing flight, I cannot say. The ground here (March 25) is still covered with snow and ice. On ten mornings this month, the mercury has been at or below zero; on March 21 it was 20° below, and at no time, I think, has it been above 34° in the shade.

Youngsville, N. Pa.

For the American Bee Journal.

Over-Production—Marketing Honey.

A. D. STOCKING.

On page 88, Mr. Heddon brings forward nothing to disprove the ideas which I advanced on page 55, but simply says that "in a few years he will see the error of his ideas," etc. If I am wrong I have good company, for I notice that several abler writers than I, have given the same views that I have with regard to over-production and the honey market; and his reference to the market reports only proves the correctness of my views as to the fallacy of sending all our honey to large market centers. Probably 80 per cent. of the honey sent to Chicago has to find its market within the city, and not 20 per cent. enters into the country markets; and it is probably about the same with all other large honey centers. I may be in error as to this, but one thing is certain, but very little honey finds its way into the country from these large honey centers, and this being the case, it is an easy matter to overstock the market and depress prices.

I have always contended that "supply and demand" control the markets for all products, and honey is no exception. I also claim that there can never in fact be such a thing as over-production in any thing until that product is brought within the reach of every consumer of the same. All commercial products have their large central markets, and from these are distributed all over the country, by representatives of these several markets, and thus a market is created. Not so with our honey; it is sent to some central market, and but little effort is made to extend the market into the country. Who has ever seen a representative of the honey market soliciting orders through the country? I never have.

I am well aware that honey is not a "modern commodity," and I am also aware that history teaches us that honey was used by the ancients as a common article of food, and that extensively, and that it was a staple article of commerce. I realize that "honey is a luxury forever," and it is one of the best God-given luxuries ever bestowed upon the human family. But it is no more a luxury than sugar, syrups, tea, coffee, and many other things that are looked upon as necessities. I do not think that the people need educating so much as to the qualities of honey as to the benefits to be derived from its

more extensive use as food, both on the table and in the preparation of pastry, to the exclusion of the grossly adulterated sweets upon the markets; and also that it should no more be considered a luxury than sugar, etc. There is no reason why honey cannot be made as staple an article of commerce as sugar, and also that it should not be produced and put upon the market at a price to bring it within the reach of the poorer class of consumers.

It is too true that the people consume large quantities of the adulterated sweets to the exclusion of honey, and it will continue so long as the people who are aware of the adulterations and their evil effects upon the human system, continue to buy and use the same and take no steps to stop the manufacture and sale of these adulterations. The bee-papers are doing all they can to this end, but they are read by but a small part of the people, and but little is seen in the general newspapers about the matter. I believe that if the bee-keepers throughout the country would unite their efforts, and through our organizations and conventions adopt measures to have this question presented fully to the people through the newspapers, both city and country, that very soon so strong a sentiment will be created that our legislatures will be compelled to enact the necessary laws to put a stop to this nefarious business, and its sale must be prohibited as well as its manufacture; and I believe that in no other way can they do more to advance their own interests than in this direction.

I have not been through as many stages of bee-keeping as many others, and never expect to; I am only a student as yet, and not a teacher. I have read and studied a great deal with my eyes open, and have learned a great deal, and expect to learn a great deal more from the reports and experiments of our old leaders. I think that there is a great deal to be learned yet, and some things yet to be learned by the graduates in the science of bee-keeping. There is more theory and speculation advanced than is essential to successful bee-keeping, and many of the young bee-keepers can lead the older ones in some things, and I think that their views and observations should not be ignored or ridiculed. Many of the A B C pupils have accomplished results which are surprising, and contrary to the theory of many of the older ones, and I hope none of them will be deterred from expressing themselves through the periodicals, from fear of the criticisms of the older heads; for it is an old saying that "a child can ask questions that a wise man cannot answer." I simply present my ideas for the benefit of others, believing that there is no one but can present something that will be beneficial and of interest to some other one.

Ligonier, Ind.

The Mahoning Valley Bee-Keepers' Association, will hold its next meeting at Newton Falls, Ohio, on Thursday, May 28, 1885.

E. W. TURNER, Sec.

For the American Bee Journal.

How my Bees Have Wintered, etc.

REV. M. MAHIN, D. D.

Last fall I had 37 colonies of Syrian and Italian bees, which I prepared for winter as follows: I made winter passages in all the combs, so that the bees could pass through from side to side without going under or around the combs. As my frames have top-bars one inch wide, I put square wooden strips about $\frac{1}{2}$ of an inch square between the top-bars, so as to make the tops of the frames close fitting; but these pieces were put in rather loosely so that a little air could pass through between them and the top-bars. Then I spread about a square yard of burlap or coffee-sacking over the section-case on the top of the hive, and letting the cloth bag down into the case, I filled it half full or more with sawdust or chaff; and folding the edges of the cloth over the sawdust or chaff, I then put the cap on. There is no packing around the bodies of the hives, all of which front to the north, though if I could have done so without too much trouble, I would have preferred to have them front to the south in the winter. The entrances have been carefully kept open.

The result of this management is, that there have been no accumulations of frost and ice in the hives, notwithstanding the exceptional severity of the weather; and if it had not been that two strong colonies consumed all of their stores, and perished with hunger, I would have lost only one colony out of 37. The 34 that are left are, on the whole, in good condition. I have never before had so good success in a very cold winter. My method of wintering may not be the best, but with me it is a success, and I am content with it. I think that most of the bees owned by the small bee-keepers in this region are dead. One has lost 4 out of 5 colonies, and another who had about a half dozen, has lost all. I have not heard from those who make some pretense of taking care of bees as they ought to be taken care of.

I have been supplying myself with a lot of very cheap and convenient bee-feeders, by taking mutilated fruit-cans, and melting the tops off. All that is needed now, is to tie a piece of thin muslin over the mouth of each can, after filling it with honey or syrup, and it is ready for business. Now lay a couple of small sticks across the top-bars of the frames, and invert the feeder on them, and pack something around and over it to keep the warmth in, put on the cap, and your bees can "snap their fingers" at hunger and frosty nights. Four of my colonies that were short of stores are in that condition at this hour. A more costly feeder has some advantage over this, perhaps, but the difference in the cost is greater than the difference in the value. Almost every family has plenty of old fruit-cans that can be utilized in this way. Glass fruit jars answer very well if the up-

per story of the hive is high enough to cover them.

Honey being so scarce last fall, I wintered several of my colonies principally on sugar syrup, and I find them now among my best colonies. I have often wintered my bees in that way, sometimes having no honey in the hive, and I have always had them to winter well. I have never put anything into the syrup to keep it from granulating. If it is sealed up in the combs, it will not granulate; at least it never has for me. I prefer the pure syrup, without any mixture, and I think that the bees do also.

New Castle, Ind.

For the American Bee Journal.

Bees Apparently Dead, etc.

I. P. WILSON.

I put about 30 colonies of bees into my cellar early in last December, and left 12 colonies on the summer stands. One-half of those in the cellar are dead, and only one of those left outdoors has survived the winter. None died from starvation, as an abundance of honey was left with nearly all the colonies that died. I should not have called it honey, for it does not deserve that name. I did not use or sell a pound of the honey gathered at my home apiary, last summer. The bees in this locality worked on honey-dew the greater part of the time, and it was entirely unfit for use.

I had 12 colonies in the country where white clover and basswood were abundant, and where honey-dew was scarcely noticed, and these gathered most luscious honey. These bees wintered well, and have come out in good condition; while those supplied with honey-dew nearly all died with the diarrhea, leaving the hives in a sickening condition.

For years I have wintered my bees in a cellar especially made for that purpose, and have rarely if ever lost a colony, and so the depleted condition of my apiary, this spring, is an unusual thing with me, and is quite disheartening.

My bees were taken out of the cellar about the middle of March, and on the day following it turned cold, the mercury fell to 5° below zero, and a strong, cold wind prevailed for several days. At length a mild day came, and I passed around hastily to peep at my 16 remaining colonies, when, to my sorrow, I found two of them apparently dead, and one of these contained my choicest queen—one which \$20 would not tempt me to part with. I carried the hive into my kitchen, and looked carefully for the beautiful queen, so as to take one more lingering look at her. I at length found her and held her my warm hand for perhaps 15 minutes, when, to my surprise, I saw her quiver, and a moment later she commenced to move. I put her into a cage, which I then placed into my vest pocket, and carried her all day, and by night she was perfectly restored. In my haste I had left the apparently dead colony in the kitchen near the stove, saying,

as I left home, "Let them stay there until noon, and perhaps they, too, will revive." Sure enough, they did revive, and when I went home at night I liberated the queen, and after keeping them in a warm place for 3 or 4 days, I again placed them on the summer stand where they are now doing well; and thus my valued queen is saved.

The colony had become quite weak, and the hive was by mistake left open in front and at the honey-board, or, perhaps, they would not have become chilled as they did. After restoring this colony, I tried the experiment on the other one that seemed to be dead, and to my surprise I succeeded in restoring its valuable queen to life, but I could only revive a very few of the bees. I found another colony which was queenless, into which I introduced this queen, and she is likewise doing well. How long they had been in this torpid condition, I do not know; but one of them, I am sure, had been so for 24 hours.

Burlington, Iowa.

For the American Bee Journal.

Is Pollen Fed to Larval Bees?

J. RUTHERFORD.

On page 134, Mr. G. M. Doolittle makes a feeble reply to my "Hard Nut to Crack," on page 60; in fact, the one statement confutes the other. The question at issue is, "Do bees in the larval state eat pollen?" On page 5, in the second paragraph, Mr. Doolittle says: "Right here I wish to say that whenever I use the word pollen, I use it in the sense of bee-bread which is stored in a solid mass in the cells." I want no better definition of the word pollen, and I accept it without further explanation. He then says: "The first fact to which I wish to call the reader's attention, as bearing on this winter question, is, that the intestines of the newly hatched bee are filled with pollen when it emerges from the cell; in fact this pollen can be easily seen by the naked eye, in the larva, before it is sealed over in the cell." Such a statement is simply imaginary, and, no doubt, the whole article was built upon a wrong foundation; because bees do not eat pollen in the larval state.

Again, in the second paragraph, on page 134, he says: "From many careful observations regarding the food of larval bees, I have been led to believe that such food was composed of about two parts honey or saccharine matter, four parts pollen, or flour when used in early spring for a substitute; and one part of water, the whole being taken into the stomach of the bee and formed into chyme, after which it was given to the larval bees in the cream-like form as we see it in the cells." There is quite a difference in his two statements, and I am glad that he is coming nearer the truth, and I hope that after he has read this article he will not only recede from his former statement, but will become a convert to scientific truth.

Allow me to analyze the food of larval bees, and see if we can trace any of Mr. D's detailed ingredients which he supposed form the food of the larval bees.

I now propose to show that his last statement is as imaginary as the first, and that no trace of his different ingredients, and especially pollen, can be found. Dr. Donhoff, an eminent German authority, says that nine-tenths of the larval food contains animal albumen and fibrine, and makes the following tests in support of this statement:

1. "If the jelly be treated with ether and water, the pure substance alone will remain; this is whitish, translucent and elastic, having all the appearances of coagulated albumen and fibrine.

2. "If the jelly dries up in a royal cell (as is the case particularly in queenless and drone-producing colonies, where the bees undertake to rear a queen from a drone larva, which invariably perishes in the process), it becomes transformed into a tough, yellow, transparent mass like that into which proteine substances are converted.

3. "If the wax and sugar be extracted from the jelly, by ether and water, and a solution of sulphate of copper be added to the residuum, oxide of copper will be precipitated by caustic potash; but the solution will retain the blue color of the salt.

4. "The mass remaining, after treating the jelly with ether and water, will be completely dissolved by a solution of caustic potash, assuming a faint yellow tinge, and on the addition of muriatic acid, will emit an odor resembling that of sulphureted hydrogen.

"Ingredients present in minute quantities only, are: 1. Wax. When I treated the jelly with ether and water, there remained an evaporation by heat—a white mass having an unctuous feel, and which, when warmed, rendered paper transparent and glossy. 2. Sugar. When the jelly was digested in water holding sulphate of copper in the solution, the addition of caustic potash produced yellow precipitate. 3. No trace of pollen or starch could be detected by employing the usual re-agent; the presence of albumen and fibrine shows that the jelly is an animal secretion, and should be designated by some more appropriate name. It seems probable that the secretion is effected by a gland in the gullet, or oesophagus, since jelly is never found in the stomach of the bee."

I may also add the names of Dzierzon and Prof. Von Siebold as holding the same view, that the food of the larva is an animal secretion, and that pollen enters in no way into the food of the larva. I would also add that it is impossible for the young bees in the larval state to eat pollen, because the digestive organs are not complete, consequently all the food taken by the larval bees must be higher concentrated food, and not fed as some of our scientific bee-keepers would have us to understand, but they simply absorb the food placed within the cell.

Prof. Cook classes all larval insects alike, which is simply erroneous, and on page 63 of his Manual, he says: "The larvae of insects are voracious eaters—indeed, their only work seems to be to eat and grow fat. As the entire growth occurs at this stage, their gormandizing habits are the more excusable. I have often been astonished at the amount of food that the insects in many breeding cases would consume."

Now, such a statement is very misleading, because there is not the least similarity between the larva of the honey-bee and the larva of the cabbage butterfly, silkworm, etc. The larva of the honey-bee never voids, never consumes any raw material, and lives sparingly and exclusively on a milk diet, and pollen is only consumed by the bees in a perfect state. Now the larva of the cabbage butterfly is just the reverse. It lives exclusively on the raw material, eats twice its weight every day, and voids freely, as every lover of that vegetable knows; but in a perfect state it eats no raw material, and lives exclusively upon the sweets gathered from the flowers, and only makes its appearance on the cabbage leaves, and deposits its eggs. Again, the Professor says: "The food is composed of pollen and honey—certainly of pollen, for I have repeatedly proved that without pollen no brood will be reared." And again: "The functions of bee-bread is to help furnish the brood with proper food; in fact, brood-rearing would be impossible without it."

Now, while we must acknowledge our indebtedness to Prof. Cook, for the many points and incentives he has given us, and the interest which he has taken in bee-culture generally, merits an enviable position; and while I acknowledge his power and influence among the bee-keepers of America, I must, in honor to the truth of which we are all in search, call the above quotation in question. It is quite evident that the Professor has written from fancy or preconceived notions of old-time bee-keepers, instead of personal observation, for he has fallen into the natural blunder of supposing the food of the larva to be simply bee-bread, because great quantities are consumed during brood-rearing, and consequently it must be fed to the bees in the larval state, as he says he has repeatedly proven, without pollen no brood will be reared. Such an assertion is hardly circumstantial evidence.

One may as well say, and with as much truth, that because the cow consumes great quantities of hay, turnips, etc., during her gestation, that her young must be fed on the same raw materials. Now, we all know that the cow produces milk from the raw material to supply her young with the necessary food, and that her young lives exclusively on milk. So the mature bee consumes pollen, honey and water to produce milk for the larval bee. This food contains, as I have already shown, fibrine, albumen, caseine, sugar and salt, which is identical with the milk of other

animals; and I may also state, that milk is the only single article of natural food that serves to support the animal body. The food of the larva is purely an animal secretion, and cannot possibly contain pollen in any sense of the word, as the change is perfect from the raw material to the life-giving fluid.

Scranton, O. Pa.

For the American Bee Journal.

Wintering Bees.

J. W. BAYARD.

While the honey-bee was created to live and propagate in a warm and genial clime, civilization and commerce has forced it into higher latitudes where it comes in contact with frost, snow and ice. Its physical make-up is so fiercely assailed that it becomes a marvel even in the hands of our most profound experts. Transpose, if you please, the Esquimaux with the Hottentot, and each will sigh for his native land, and speedily succumb to climatic influences. Nature has been warped; the normal conditions of the bee have been violated, and now we are seeking for a remedy for our manifold troubles.

The winter of 1855-56 will long be remembered by old settlers, as a period in the history of the honey-bee. Peach trees were all killed, and many cherry trees burst open with the frost. No flight was possible for the bees for more than 12 weeks; outdoor wintering then being the order of the day. At that time I had 7 colonies in box-hives, conditioned as follows: Six were placed on a wide, thick plank (called a "bee-bench") close together, and protected only on the west by a tight board fence. All the practical ventilation was 3 or 4 V-shaped openings called "fly-holes." When the first thaw of spring came inviting the bees to take a flight, not one bee responded to the invitation. Upon examination, I found them largely piled on the bottom-board. The walls of the hive were dripping with water, and the combs were all wet and moldy—all indicating the worst possible phase of bee-diarrhea, being the result of excessive cold, long confinement and bad ventilation.

Now, we will notice colony No. 7, as I had but that one left. It was suspended upon a rack by cleats screwed to the sides of the hive. The bottom of the hive was cut slanting with the bottom-board suspended on wires, leaving a full inch space all around for ventilation, and rolling off dead bees and chippings from the body of the hive. This principle was once patented, and has one very important feature—that of copious ventilation. No disease ever invaded this colony to decimate its ranks or destroy its vigor. During 19 years of consecutive bee-life, it sent forth 17 prime swarms and produced 16 boxes of honey of 26 pounds each. This amount of honey is insignificant when compared with modern methods of obtaining surplus, but in those days we never worked our bees for profit.

In 1858 I adopted the Langstroth hive for my own use, and I found many advantages in its copious entrance, 10x3/4 inches, in the way of expelling impurities, keeping the combs and cluster dry, and permitting the foul gases to escape without upward ventilation. In truth, I am almost in full sympathy with Mr. Clarke's theory of downward ventilation, but not so with his hibernation theory, which I consider entirely mythical. No cluster of bees ever hibernated, and never will, according to his own definition of "complete or partial torpor." When bees cluster for winter, they not only obey the laws of nature, but accomplish the imperative duty of self-preservation. In cold weather, all stores consumed by a colony is carried or kept in the centre of the cluster where it is not only kept warm, but convenient for immediate use. When the mercury vibrates below zero, great activity prevails within the cluster, and larger quantities of honey are consumed to keep up the animal heat, and to raise the temperature in the hive. This is why more honey is required for out-door than in-door wintering; and this is why there is so much non-activity among bees that are contending against the element, than those enjoying a temperature of 45° beyond the reach of frost and snow.

If Mr. Clarke desires to make his hibernation theory a success, he should be careful, after manipulating the honey-bee into a state of profound torpor; as on page 760 of the BEE JOURNAL for 1884, he requires the same honey-bee to rise upon its tip-toes in the cluster and fan out the cold air in the hive as they fan it in in the summer, thereby regulating the temperature. This may do very well for kite flying, but it will cause a visible smile on the face of every practical bee-man in the land.

Athens, O. Ohio.

For the American Bee Journal.

Hibernation or Quietude, Which?

JAMES M'NEILL, (110-230).

I am glad to learn through the article entitled "A Would-be Critic," on page 148, that the purpose which I had in view, in my article on page 39, has been at least partially accomplished. In the first place I felt that the dignity of reading bee-keepers demanded that a protest be made against the mental pabulum with which Mr. Clarke was feeding us. In the second place, it appeared to me that I would be doing Mr. Clarke, no less than bee-keepers generally, a service if I should present the subject in such a light as would lead him to take a more rational view of the importance of his discovery; and to this end I endeavored to hold the mirror up before him, that the prayer of Burns might be answered in his behalf:

"Oh wad some power the giffle gie us
To see oursel's as others see us!
It wad frae monie a blunder free us,
And foolish notion."

As Mr. Clarke concedes that it would have been "chust as weel," if he had announced his assumed discovery in a less excited manner, I take it that he has seen himself, in a degree at least, as others see him, and has profited by the reflection.

He says: "I am blamed for not making careful and prolonged experiments;" and then proceeds to vindicate the haste with which he announced his discovery. Evidently Mr. Clarke has an ambition to shine among the lights of the bee-keeping world, but he should remember that such lights, to be valuable, should be reliable. They must cast their reflection forward as well as backward. He who would lead others should first make himself familiar with the road which lies before him; for a high authority says that "if the blind lead the blind, both shall fall into the ditch."

Prof. Cook, in his Manual, page 20, while paying a tribute to Mr. A. I. Root's service in the advancement of apiculture, nevertheless regrets "that he often so stoutly praises that with which he has had so brief an experience, and must consequently know so little." The same excellent authority, in an article in "Gleanings," entitled "The Danger of Hasty Conclusions," takes Mr. Hutchinson to task for publishing his seeming success in wintering bees in a clasp, so confidently. "Such reports," he says, "are premature, and mislead, and do much damage. Mr. H. says that two of his neighbors are his companions in suffering. I doubt not that there are scores; for Mr. Hutchinson is an extensive writer, and his words have weight.

It seems to me that in our writings we cannot be too careful in withholding conclusions till a generous number of examples makes a real demonstration. Beecher is reported to have said that his greatest fault is 'slopping over,' a rude phrase, but it may well apply to some of us writers." I would commend these words of wisdom to the consideration of Mr. Clark, especially if he aspires to be a leader of thought among reading beekeepers.

In replying to my assertion that he has furnished no demonstrable proof that bees hibernate, Mr. Clarke says: "I have furnished demonstrable proof that bees relapse into a state of torpor or semi-torpor, quiescence or dormancy." Observe the latitude which he gives himself here. Torpor, semi-torpor, quiescence—like the three degrees of comparison, good, better, best, are all-embracing. If this be his idea of hibernation, we stand on common ground, and there is, on this point at least, no controversy between us; and although I repudiate his implied accusation, that I have misrepresented his position, as merely insisting on what bee-keepers have almost unanimously agreed to be the normal winter condition of bees, viz: quietude, his own words now clear me from any such charge; for quiescence and quietude are identical in meaning, and may be defined as a state of rest or repose.

But this is not the idea which he attaches to the word hibernation, for on the next page he defines his position explicitly, where he says: "1. Bees naturally fall into a condition of torpor, scientifically known as hibernation, during winter." Now, has Mr. Clarke furnished us with demonstrable proof that the normal condition of bees in winter is a state of torpor, as contradistinguished from a state of quietude? Most clearly he has not. To say that hibernation, as lastly defined by Mr. Clarke, is demonstrably proved because the bees were quiet, consumed little honey, and came out in good condition in the spring, is certainly very illogical; for the question still remains: Were the bees in a state of torpor, or merely in a condition of quietude?

Just here I would like to raise the inquiry, what is the scientific meaning of the word hibernation? Webster defines hibernation, "to winter: to pass the season of winter in close quarters, or in seclusion as birds or beasts." If this be the real scientific meaning of the word, Mr. Clarke has truly made a wonderful discovery.

Fancy the cudgeling of brain with which the student of apiculture of some future generation, in consulting the great lights of our own day, will strive to account for the fact that in the year 1884, W. F. Clarke announced to the world as one of the most important discoveries which had yet been made in apiculture, that bees actually pass the season of winter in close quarters, or in seclusion.

In concluding his article, Mr. Clarke says: "One thing is certain, it (hibernation) was not recognized as such, and among the multitudinous methods of wintering, was not so much as named." In correction of this assertion, I would refer Mr. C. to the "Kansas Bee-Keeper" for April 1883, where Mr. Heddon uses the word, and also to the BEE JOURNAL for 1879, page 278, where the word hibernate is used.

In conclusion I will say that while I would not pluck one leaf from the laurels of the patient, faithful, laborious investigator in any department of science, I am not disposed to render homage to any one who appears more anxious to be crowned than to wear his laurels worthily.

Hudson, N. Y.

For the American Bee Journal.

The Wintering Problem Solved.

HILAS D. DAVIS.

I have successfully wintered my bees for the past three winters. In 1882, I had 64 colonies; in 1883-84, I wintered 84 colonies; in 1884, I packed in my bee-yard 100 colonies, among them 12 queen-rearing nuclei, none of them containing over three pints of bees. One of this number starved, as there were not bees enough to move the cluster to where there was honey, on account of the steady cold weather this spring. This winter I tried to test the wintering qualities of the hive (which I call the New England No. 7), and my method of feeding, and I have lost but one colony in that hive during the three years, and that was one of the twelve nuclei.

The hive that I use (the New England No. 7 hive) is one upon which I have been employed for a number of years, and embodies many and oft-repeated experiments. The hive is constructed in sections, the cap, two sections and the base. The brood-nest is disconnected from the hive, being separated therefrom both beneath and at the sides, so that it can be removed without any disturbance of the outer case. The space between the brood-nest and the hive is packed during the entire year with buckwheat, India-wheat, dry sawdust, or any material that is dry and fine. The object of this packing is to protect the bees from the extremes of both heat and cold. The packing beneath the brood-nest is serviceable during winter, in that it inclines the bees to seek the bottom of the hive (which is the warmest part of it) instead of the top. In this case, when the bees drop from the combs they do not die of exposure, but finding a place among the cluster, they are warmed and revived. It is also an advantage to have bees at the bottom of the hive in spring, as they then protect the brood above, from the draughts of air.

In this locality, the last harvest of honey is gathered from basswood. As soon as the surplus from basswood is sealed, I remove it and put a set of extra combs in its place. I then feed strictly pure granulated sugar syrup (in the proportions of 4 pounds of sugar to one quart of water) until the combs are filled therewith. In preparing this food, I pour the water in a boiling state, upon the sugar, and stir it until it is dissolved. Having these combs filled at this time in the sea-

son, it serves the double purpose of stimulating bees to rear young brood for winter use, and also to thoroughly ripen the sugar syrup which is of the utmost importance. On no account should any but an expert attempt late feeding which, as a rule, is unadvisable and a detriment to the bees.

Before the fall harvest of honey is gathered, I remove these combs filled with sugar syrup, to the storehouse, and also lift out of the brood-nest all of the frames of honey that are not filled with brood, replacing them in the centre of the brood-nest with empty combs or frames filled with comb foundation. If the bees gather a large quantity of fall honey, the beekeeper must use his judgment in the matter, supplying room for surplus.

After the colonies have finished storing fall honey, and the brood is all hatched, I remove the fall honey to the storehouse, keeping it for another season for the young colonies to use while rearing brood. In place of this fall honey thus removed, I give combs filled with sugar syrup. Upon this the colonies will feed during the winter. As a final arrangement, I lay two one-inch-square sticks crosswise over the frames to enable the bees to pass from one comb to another; then I cover them with two thicknesses of burlap or porous cloth, and cover the whole with packing, such as has been described, to the depth of 4 inches, excepting over the centre of the brood-nest. Thus fed and packed on the summer stands, no colonies need be lost during winter.

On Nov. 15, 1883, I put into the cellar a number of colonies of bees, in old hives with movable frames, which were fed on sugar syrup. By some mistake one colony was left in the cellar until June 20, 1883, when I was informed that there were bees in the cellar; and upon examination I was astonished to find the colony in a perfectly healthy condition, lively, and no traces of diarrhea, which was remarkable as the colony, which was a small one, had been confined about 234 days, and was removed from the cellar when my other bees were nearly done swarming. It was amusing to see what a grand flight they had after their long winter's repose.

In this connection I will give my method of transferring bees. I do not transfer them until late in the fall, when the hive is the most free from brood, and when I am preparing them for winter. I then drum out the bees, running them into a hive containing a set of combs filled with sugar syrup. If there be any brood in the hive, I cut it out and transfer it into frames, placing it in the centre of the brood-nest, after which I pack and prepare the bees for winter. There are valuable features in this method. First, one is not obliged to stop during the busy season to attend to this work. Second, as all bee-keepers are aware, if the bees are transferred in the spring, and the season proves a poor one, while the expert may overcome this and build up in time for winter, yet with the beginner, disastrous results are almost certain to follow on account of the bees not properly building up in time for winter.

While I consider strictly pure sugar-syrup in combs, properly sealed, the best thing for winter stores (pure clover and basswood honey which are free from fall honey, are good, but more expensive), yet I would caution all never to allow one ounce of it to be placed in with the surplus honey.

All of my bees have had a flight, and are in good condition. I have no frosty brood-nests, moldy combs, or dead bees in my yard. I have mastered the wintering problem. With proper food, fed at the proper time, and with a faithful manager, and a properly constructed hive, there is no need of any loss among bees.

Bradford, Vt.

For the American Bee Journal

Northeastern Kentucky Convention.

Met in Walton, Ky., on April 1, 1885. The Secretary being absent, Mr. John T. Connelly was appointed Secretary pro tem. The minutes of the previous meeting and also the Treasurer's report were read and approved. As the election of officers was in order, the President and Secretary were re-elected until the semi-annual meeting on Sept. 23 and 24, 1885.

The Rev. L. Johnson, President of the Kentucky State Bee-Keepers' Society, reported that the average loss for the northern part of the State during the past winter, is not less than 30 per cent. Yet the outlook for bee-keeping is not discouraging, as all are looking forward for a season of at least average prosperity. Many questions of importance to bee-keepers were asked and answered.

All who were present were highly pleased with a nice exhibit of choice comb and extracted honey, being the product of Rev. L. Johnson's fine apiary. He also had on exhibition some colonies in observatory hives, showing his choice Italians and Syrio-Albino strains of bees, which were handsome enough to animate any bee-keeper or any admirer of the beautiful.

Mr. J. T. Connelly read an essay on "How to Prepare and Winter Bees on the Summer Stands," and the Association unanimously requested him to prepare the same for publication.

Rev. L. Johnson read a very instructive essay on "The Possibilities of Bee-Keeping in Kentucky."

President McVean made many good, practical suggestions, and every member of the Association, as well as the visitors, expressed themselves as having been benefitted by the meeting.

The Convention donated to the Odd Fellows' Lodge \$2.00 for the use of their Hall, which they had kindly offered to the bee-keepers. The Convention then unanimously voted to adjourn to meet with the Kentucky State Bee-Keepers' Society in Covington, Ky., on Sept. 23 and 24, 1885.

J. T. CONNELLY, Sec. pro tem.

P. McVEAN, Pres.

Local Convention Directory.

1885. Time and place of Meeting.

- Apr. 18.—Marshalltown, at Marshalltown, Iowa.
J. W. Sanders, Sec., Marshalltown, Iowa.
- Apr. 18.—Eastern Indiana, at Richmond, Ind.
M. G. Reynolds, Sec., Williamsburg, Ind.
- Apr. 23.—Union Ky., at Eminence, Ky.
G. W. Demaree, Sec., Christiansburg, Ky.
- Apr. 23.—Western, at Independence, Mo.
C. M. Crandall, Sec., Independence, Mo.
- April 24.—Portage County, at Ravenna, O.
L. G. Reed, Sec., Kent, O.
- Apr. 25.—Union, at Earlham, Iowa.
M. E. Darby, Sec., Dexter, Iowa.
- Apr. 28.—Des Moines County, at Burlington, Iowa.
Jno. Nau, Sec., Middleton, Iowa.
- May 2.—Central Illinois, at Jacksonville, Ill.
Wm. Camm, Sec., Murrayville, Ill.
- May 5.—W. New York and N. Pa., at Cuba, N. Y.
W. A. Shewman, Sec., Randolph, N. Y.
- May 4.—Linwood, Wis., at Rock Elm Centre, Wis.
B. Thomson, Sec., Waverly, Wis.
- May 7.—Progressive, at Bushnell, Ill.
J. G. Norton, Sec., Macomb, Ill.
- May 7, 8.—Texas State, at McKinney, Tex.
W. R. Howard, Sec., Kingston, Tex.
- May 12.—Cortland Union, at Cortland, N. Y.
W. H. Beach, Sec., Cortland, N. Y.
- May 19.—N. W. Ills., and S. W. Wis., at Davis, Ills.
Jonathan Stewart, Sec., Rock City, Ill.
- May 28.—Mahoning Valley, at Newton Falls, O.
E. W. Turner, Sec., Newton Falls, O.
- May 28.—N. Mich. Picnic, near McBride, Mich.
F. A. Palmer, Sec., McBride, Mich.
- May 29.—Haldimand, Ont., at Nelles' Corners, Ont.
E. C. Campbell, Sec.
- June 19.—Willamette Valley, at La Fayette, Oreg.
E. J. Hadley, Sec.
- Dec. 8—10.—Michigan State, at Detroit, Mich.
H. D. Cutting, Sec., Clinton, Mich.

SELECTIONS FROM
OUR LETTER BOX

Destroying Ants in the Apiary.—M. H. Berry, Dover South Mills, ♂ Maine, gives the following remedy:

For 28 years I have used gum camphor, and it never failed to drive them away. Put it in the hive or on the edges of the bottom-board, and it can be used in the honey-house as well. I would like to have bee-keepers try it and report through the BEE JOURNAL.

Report, from A. Crosby, Kennedy, ♀ N. Y., on April 6, 1885:

My bees are coming out much better than I expected, as the late pleasant days have given me an opportunity to examine them, and to find out the true state of affairs. Heavy losses are reported in this section.

Storing Empty Combs, etc.—W. S. Pierson, Eureka, ♂ Mich., on April 6, 1885, writes thus:

Last fall I had 64 colonies of bees, some in double-walled hives, and some in boxes packed in chaff on the summer stands, and 50 of them have starved with from 10 to 25 pounds of honey in each hive. 1. Can I extract the honey, boil it, and thus make it fit for table use? 2. How can I keep my empty combs through the coming summer, as I wish to work my bees for increase only? 3. What is the best method of getting increase?

[1. The honey was not injured because the bees starved without being able to reach it. It is just as good for table or any other use, as it ever was.

2. Keep the combs in a tight box, and fumigate with sulphur to kill the moths, if they have been exposed.

3. On page 148 you will learn how to get increase judiciously.—ED.]

Report, from E. C. Crane, Hillsboro, ♂ Iowa, on April 6, 1885:

I put into winter quarters 37 colonies in apparently good condition, and took out 33 which seem to be all right now, and are carrying in pollen. On April 5, I put sawdust in the cellar for winter packing. I think that the cellar is the best place to winter bees. The bees in this locality are all dead, a great many of them having frozen. I use the Quinby improved hive.

Report, from R. A. Calvin, Hartford, ♀ Mich., on April 4, 1885:

Last fall I packed 88 colonies as described on page 644 of the BEE JOURNAL for 1883, and so far I have lost 35 colonies. Only 8 or 10 showed any signs of diarrhea. A number of them starved, and others dwindled with plenty of honey.

Report, from Ira Barber, DeKalb Junction, ♂ N. Y., on April 2, 1885:

I removed all my bees home last fall, and I have them now in the old cellar that I commenced wintering bees in nearly a quarter of a century ago. Although the cellar is cool, to all appearances the bees are in fine condition. I have tested the cellar at three different times during the past winter, and the temperature has varied but three degrees. The first was on Dec. 20, 1884, when the thermometer indicated 17° above zero outside, and 47°

in the cellar; on Jan. 20, 13° below zero outside, and 45° above in the cellar; and on March 30, 45° above zero outside, and 48° above in the cellar. I cannot account for the slight difference in the last test, unless it was caused by the extreme cold weather for two weeks previous. I took 220 colonies out of winter quarters last spring, sold 18, commenced the honey season with 200, increased them to 212 colonies, obtained 8,000 pounds of comb honey, sold 12 colonies last fall, and placed the remaining 200 colonies in the cellar on Nov. 20, 1884, although 5 of them were badly broken in moving. When the bees are out of the cellar I will try to report the difference in wintering with very high and with medium temperature. I have made no examination as to the amount of honey the bees are consuming, but I am quite certain that they have used less than if wintered in an extremely high temperature. We have plenty of snow in this section yet. There are drifts 4 feet deep in my bee-yard now.

Report, from Wm. Morhous, Dearborn, ♂ Mich., on April 2, 1885:

I have secured reports from ten of my neighbors, and I find that out of 232 colonies, which, last fall, they and myself prepared for winter, we have only 12½ colonies left. I do not know of a live colony of bees within 5 miles of here, excepting one man who, I hear, had 15 colonies buried under a snow-drift, and lost only one, and that was by starvation.

Report, from Wm. Anderson, Sherman, ♂ Mo., on March 31, 1885:

I have wintered 19 colonies out of 30. Seven colonies froze to death with at least 20 pounds of pure buckwheat honey in the hives, and 4 starved; the remaining colonies are in good condition, except that they are robbing some. I have been trying to stop it, but with poor success. The weather is pleasant now.

Report, from S. D. McLean, Columbia, ♂ Tenn., on April 2, 1885:

Owing to the drouth of last autumn, bees gathered no honey from fall blooms, and consequently entered winter in poor condition. The result has been, that those, all over the country, who failed to feed liberally, have lost many bees. The severity of the weather doubtless increased the mortality for the winter has been long and cold. There is not a bloom from peach or plum, or any other fruit trees yet—a thing most remarkable for this latitude. But the dreary winter is over, and genial spring has come to open nature's store-house and bid the bees, with all living, to accept the bounty freely offered. This is an encouraging thought to the apiarist.

Report, from S. Shoup, Coloma, ♀ Mich., on April 1, 1885:

The past winter has been a terrible one on bees, through this section of this State. As near as I can learn, 3-5 of all the bees are dead.

Honey-Dew for Winter Stores.—H. R. Boardman, East Townsend, ♂ O., reports as follows:

I finished putting out my bees on April 1, in fine condition. They were put in from Nov. 18 to Nov. 20, there being in all 400 colonies in three localities, which were placed in two bee-houses and one cellar under a dwelling house. I feel quite elated at not having forfeited my reputation for wintering successfully, during this disastrous winter. The winter losses will be very severe throughout this part

of the country, and of those wintered out-doors in the old-time way, very few will be left. I notice by looking over the reports, that the winter losses are almost invariably attributed to honey-dew which was stored in such unusual quantities last season. I have demonstrated to my own satisfaction that honey-dew is not necessarily fatal when used as winter stores, as it constituted the principal part of the stores upon which my bees have wintered so nicely. I wished to make the matter very clear in my own mind, and among other experiments I fed up several colonies last August on the genuine "bug juice," first removing all combs, and in one colony I only supplied empty frames so that the combs were also built up from this questionable food. These colonies came out in as fine condition as the very best, although I had others upon which I was experimenting, that were fed up wholly on sugar syrup.

Report, from Wilson Sherman, Chester Centre, Iowa, on April 4, 1885:

After a confinement of 131 days, on March 26, I took my 12 colonies of bees from the cellar, and 10 of the 13 were alive and in splendid condition; 2 had died with the diarrhea. The cellar in which they were wintered was dug last fall, and it was walled up with brick late, and the mortar did not have time to dry, so the cellar was very damp. If it had not been so damp I think that I would not have lost any, as the two that died were very damp and moldy. The cappings had cracked, and water run in and soured the honey, thus causing their death. The mortality of bees in this part of the country has been very great. Those that were left on the summer stands are all dead, and also a large share of those wintered in the cellars have perished.

Report, from R. B. Murphy, Garden Plain, Mo. Ills., on April 3, 1885:

My bees have wintered well. I lost only 4 colonies out of 136, and they starved. They were wintered in a bee-house. Those that were out-doors are mostly dead, or very weak. Mine are all strong colonies, having wintered splendidly. The main point in in-door wintering is putting the bees in before there is any frost formed in the hive. During the past three winters my bees have begun breeding in January, and then came out as strong or stronger in bees than when put in.

Report, from L. L. Triem, La Porte City, Iowa, on April 4, 1885:

Wintering bees in cellars has proven the best here, as far as heard from. I have 165 colonies in splendid condition, each of which are occupying 5 and 6 spaces in 8-frame hives.

Report, etc., from W. L. Cogshall, (250), West Groton, N. Y., on April 3, 1885:

Bees had a flight on April 1. Mine are packed in sawdust with 4 to 10 in a box, with a slot cut in the boxes for entrances. I examined the colonies in two bee-yards of 75 each, and I found 3 dead. I find a good many dead bees under the hives and around the entrances. I hear the box-hive bee-keepers have lost one-half of their bees. Messrs. Dadant & Son, page 165, expressed my views exactly on the drone-trap. In my opinion they are not worth the room they occupy, to a man who is producing honey. I was taught that the best way to get along with trouble is not to get into trouble, so I do not rear drones.

Severe Losses of Bees.—H. Hance, Bryan, Mo., on March 30, 1885, says:

The loss of bees in this section is very heavy. Out of 680 colonies belonging to 26 of my neighbors, only 115 colonies are left, many of them losing all. So far, my own loss is 39 colonies out of 72. Some of my bees froze, some had the diarrhea, and some starved on account of being unable to get to their stores. Bees were wintered in various ways here—some were in cellars, some were well packed, and some not packed at all, but all fared about the same. I say, do not give up; although our ship be wrecked, let us launch another and endeavor hereafter to steer clear of the disastrous reefs.

Report, from H. T. Hartman, Freeport, Mo. Ills., on April 3, 1885:

At last my bees are on the summer stands again. They were in the cellar 4½ months, and came out in much better condition than I had expected they would. Out of 82 colonies, only 4 were dead, and 2 of them had starved. They are nearly all in good condition. Bees that were wintered on the summer stands, in this section, are nearly all dead. One bee-keeper here only had 3 left out of 100 colonies; and another, 3 out of 27. Some who wintered their bees in cellars have lost quite heavily. The most of the cellars were too cold. The temperature of my cellar was kept at 45° above zero, by means of artificial heat. I have to-day put out rye meal for the bees, and it was not long before it was swarming with bees. This will stimulate brood-rearing, and will also prevent robbing, and keep the bees at home. I have always used it with success.

Report, from J. P. Hensley, Grand Island, Nebr., on April 3, 1885:

I packed one colony with chaff in a Heddon hive on Oct. 26, 1884. On Feb. 26, they had a good flight, and to-day I unpacked them, and they are in splendid condition. The mice killed about a quart of bees in February, and I unpacked them and moved them into a room in my house, where I had them for 7 days, after which I returned and repacked them, and to-day they are all right.

Report, from M. E. Darby, Dexter, Iowa, on April 1, 1885:

From 75 to 90 per cent. of the bees in this vicinity have succumbed to King Boreas. My own loss is comparatively light—2 per cent. of those wintered in the cellar, 35 per cent. of those in clamps, and 95 per cent. of those on the summer stands unprotected.

Report, etc., from J. O. Shearman, New Richmond, Mich.:

I have noticed the same symptoms as mentioned on page 196, in a number of bee-yards during the years 1876, 1880, and 1881, excepting as in the sugar-fed colonies mentioned on that page. Bees cannot withstand such protracted cold on sour honey, and the sugar-fed colonies might have been fed syrup too thin or too late, or both. So far I have lost 8 colonies (4 of which starved) out of 130.

Report, from F. Searles, Marley, Mo. Ills., on April 3, 1885:

My colonies are all on the summer stands again. I put them into the cellar about the middle of last November, and I took them out on April 1. I found that 2 colonies had starved, leaving plenty of pollen but no honey. Last fall I put in 110 colonies, and 108 of them were in fine condition when I took them out. I leave all the bottom-boards and the caps in the

bee-yard, taking only the brood-chambers with the bees. I raise the first ones 10 inches from the cellar bottom, and then I put some short pieces of 2x4-inch scantling on them, and lay some boards on these, and pile up the hives as high as I can reach. The air can then circulate all through them. I use no quilts, and some of the slats are removed from every honey-board. I have never lost 10 colonies with the diarrhea in the 30 years that I have kept bees. My cellar has no ventilation except what there is around the cells and the door, and what air gets in when entering for apples, vegetables, etc., which occurs from 1 to 6 times a day. If the bees have plenty of good honey and pollen, I have no fears about wintering.

Not Lost One Colony.—Jno. L. Comstock, (2-9), Sac City, Iowa, on April 6, 1885, writes:

My bees have wintered splendidly. I took them out of the cellar on April 1, and they now have young brood and plenty of eggs. I thought of grinding some rye for them for pollen, because I went to feeding sugar syrup as soon as I put them on the summer stands; but I will not have to grind any, as they go into our flouring mill and help themselves. They seem to get lots of pollen around the mill. I watched several of them to see them work on mill-dust, on April 4. I commenced last spring with 2 colonies, and I put nine into the cellar. They all came through strong.

Special Notices.

Those in want of Bees should notice that the whole apiary of the late Mr. L. James, of Atlanta, Ill., is to be sold at Auction next Tuesday.

Our rates for two or more copies of the book, "Bees and Honey," may be found on the Book List on the second page of this paper. Also wholesale rates on all books where they are purchased "to sell again."

We want one number each of the BEE JOURNAL of August, 1866—February, 1867. Any one having them to spare will please send a Postal Card. We will pay 50 cents for one copy of each of the two numbers.

The Farmer's Account Book contains 166 pages, printed on writing paper, ruled and bound, and the price is \$3.00. We will club it and the Weekly BEE JOURNAL for a year for \$4.00. If you have already sent us \$2.00 for the Weekly BEE JOURNAL for a year, we will send the Book for another \$2.00, making \$4.00 in all. If you want it sent by mail, add 20 cents for postage.

We want one number of the Weekly for 1884—May 28. Will any one who does not bind them, write a Postal Card saying what they will take for it? Do not send it until you hear from us, that we are not already supplied.

The next meeting of the Union Bee-Keepers' Association of Western Iowa, will be held on April 25, 1885, at Earlham, Iowa. M. E. DARBY, Sec.

Preserve your papers for reference If you have not got a Binder we will mail you one for 75 cents, or you can have one FREE if you will send us 3 new yearly subscriptions for the BEE JOURNAL.

For two subscribers for the Weekly BEE JOURNAL (or 8 for the Monthly) for one year, we will present a Pocket Dictionary, and send it by mail, postpaid.

Advertisements.

350 Colonies

Italian Bees for Sale!

Full colonies, Nuclei, Tested and Dollar Queens. Circular on application.

J. H. & W. ROBERTSON, - PEWAMO, MICH.
15A1t

For Sale 1,500 Wired Combs, straight and perfect. Size, 17 $\frac{1}{2}$ x9 $\frac{1}{4}$; also 100 to 200 colonies, and a 9-inch Dunham Foundation Machine. **H. HYDE, Alderly, Wis.**
15A2t

25 Strong Colonies Italian Bees in L. Hives for Sale Cheap. Write at once to C. W. KING, Kibbie, Van Buren Co. Mich.
15A1t

Hybrid Bees For Sale!

I WILL sell a few strong colonies, carefully fitted up for transportation, and delivered at the depot here, in good 10-frame Langstroth Hives, and honey enough to last until flowers come, for \$10 each. Will also **SELL SWARMS** during swarming time.

R. K. McCUNE, Fairwater, Fdu Lac Co. Wis.
15A1t

PURE IMPORTED ITALIAN QUEENS!

WE shall receive an early shipment from MONTE FIORITO, ITALY. We shall be pleased to book orders for them.

15A2t **MUCCI & BRO, Lexington, Ky.**

50 Colonies of Black Bees for Sale

In Movable-Frame Hives. Will sell at A BARGAIN.

J. J. QUINN, - Henderson, Ky.
15A1t

Sliced Sections!

ONE-PIECE, V-GROOVED.

THEY are perfect in every respect. Took the first premium at the Michigan State Fair last Sept. Every apiarist who uses them once, wants no others. Will send two samples by mail for 4 cts. postage, or a sample thousand, 4x4 $\frac{1}{4}$ for \$4.00. The list price is \$4.50 per 1,000—\$21.00 per 5,000—\$40.00 per 10,000. Send for Circular, etc. Supply dealers will do well to correspond with us.

Address, **BERLIN FRUIT BOX CO.,**
14A3t Berlin Heights, Ohio.

1879. — ITALIAN — 1885.

QUEENS!

FOR ITALIAN QUEENS in their purity, and that cannot be excelled, Comb Foundation and Supplies generally, send for Circular.

12 UNTESTED QUEENS for \$11.00.
15A1t **T. S. HALL, Kirby's Creek, Ala.**



New England No. 7 Bee-Hive

We warrant it to be without an equal as a practical hive for general use.



We guarantee if directions are carefully followed, that not ONE COLONY need be lost during winter with this hive

We furnish at short notice of every description.

WE manufacture and keep in stock white Poplar SECTIONS of all sizes of the finest quality and at bottom prices. We guarantee satisfaction. Don't purchase until you send for our Circular and prices. Send 4-cent stamp for sample Sections. Circular free. Address,

HILAS D. DAVIS, Bradford, Vt.
15A1t 5B1t

BEES FOR SALE!

100 COLONIES OF ITALIAN BEES that have been bred for working qualities; many of them **STRONG**, having gathered 125 lbs. of No. 1 honey the past poor season, and most of it from a distance of from 2 to 4 miles. They are in our 8-frame Langstroth Hives, and will be sold in the hives complete, if desired. Also

150 COLONIES OF BROWN GERMAN BEES,

in 9-frame Hives; frames, 10x13 inches. All strong colonies. Address,

A. J. & E. HATFIELD, SOUTH BEND, IND.
14A2t

DUNHAM AND VANDERVORT FOUNDATION.

WE have bought a large stock of Choice Yellow Beeswax, and can furnish Dunham Comb Foundation for brood comb for 50c. per lb. Thin Dunham for Sections, 55c. per lb. Extra thin Vandervort, 10 to 12 square feet to the lb., 60c. per lb. Will work up wax into Foundation for 10, 15 and 20c. per lb. To induce our customers to order Foundation early in the season, we will allow 10 per cent. discount on all orders received before the 1st of May.

F. W. HOLMES,
9D9t COOPERSVILLE, Ottawa Co., MICH.

Bee-Keepers' Supplies.

We have added to our LARGE FACTORY a SPECIAL DEPARTMENT for the

Manufacturing of Bee-Hives,

AND

White Poplar Dovetailed SECTIONS.

All Orders will be filled promptly at the LOWEST FIGURES.

Send Stamp for Catalogue and Samples.

The H. F. MOELLER Mfg Co.
1A26t DAVENPORT, IOWA.

GEO. GRIMM, of Jefferson, Wis.,

Will sell 300 to 400

COLONIES OF BEES

In the 8-Frame Langstroth Hive at the following prices:

Pure Italians, 1 to 5	\$6 50
" " 5 to 20	8 00
" " 20 or more	5 75
Hybrid Italians, 1 to 5	5 75
" " 5 to 20	5 25
" " 20 or more	5 00

TERMS and Conditions as follows: Orders will be booked only when accompanied by the **Cash**, and will be filled in their proper turn. I will ship some time in the month of May, and the exact date must be left in my discretion to be governed by the circumstances and the weather. Will notify before shipment. Will **Guarantee Safe Arrival** at last Express Station, and will guarantee satisfaction. 9D4t

100 Colonies of Choice ITALIAN BEES FOR SALE. Send for Price-List. Address, **W. J. DAVIS, (Box 91)**
14A9t Youngville, Warren County, Pa.

BE SURE

To send a Postal Card for our Illustrated Catalogue of **APIARIAN SUPPLIES** before purchasing elsewhere. It contains illustrations and descriptions of everything new and valuable needed in an apiary, at the lowest prices. Italian Queens and Bees. Parties intending to purchase Bees in lots of 10 colonies or more, are invited to correspond.

J. C. SAYLES,
1D1st 2B5t HARTFORD, WIS.

6 SYRIAN QUEENS, \$6

WARRANTED PURELY MATED for

Single Queen, \$1.25. Tested Queens, \$3.00 each. Italian Queens at the same prices. 4 L-frame Nuclei, with Tested Queen, \$5.00.
10D4t **I. R. GOOD, Sparta, Tenn.**

SOMETHING NEW!

THE Best-Made, handiest and cheapest combination,

Summer and Winter Hive

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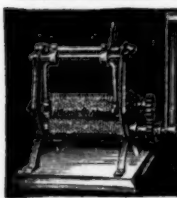
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